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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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SUMMARY OF THE TOMATO DISEASE SURVEY IN CENTRAL CALIFORNIA

Horace L. Barnett

This report is intended as a summary of the observations made to date (August 12) on tomatoes in Central California. A few of the observations made early in the season have been given in previous reports, but for the most part this information has not been reported. The surveys made in Yolo County and in San Joaquin County were made in company with Dr. M.W. Gardner and Dr. J.B.Kendrick.

The main tomato growing districts in central California are located in the central (San Joaquin and Sacramento) Valleys and in the counties of the Bay district. The estimated acreage[1] in the State in 1944 is 130,000 acres, which represents an increase of 15% over the 1943 acreage. Of this total approximately 100,000 acres[1] are planted in the counties included in this survey. These counties are: Kern, Madera, Merced, Stanislaus, San Joaquin, Sacramento, Yolo, Solano, Napa, Contra Costa, Alameda, Santa Clara, Santa Cruz, Monterey, and San Benito.

The "Truck Crop Notes" of July 20, 1944, which is mimeographed and distributed by the California Department of Agriculture, summarizes the effect of the weather upon the present tomato crop as follows: "Cool weather has held back the vine growth but most plantings have excellent color. . .", and, "Due to cold weather the early setting of fruit is slight". In recent weeks the set of the fruit in the areas visited has improved considerably. Some of the fields were visited just as the fruit was beginning to set, and the main part of the survey was made before any of the fruit was ripe.

Some of the tomato diseases were more severe or widespread than in the average year. These include Bacterial canker, Spotted Wilt and tomato Mosaic.

Spotted Wilt (Virus). As in previous years, spotted wilt is more severe this season in coastal districts than it is in the interior districts. The disease was first noticed this year in commercial field plantings on June 7 at Mt. Eden (Alameda County). According to records this date is more than 2 weeks earlier than its appearance in the same area last year. At the present time several fields in the western part of Alameda County show as high as 50% infection with spotted wilt. Most of these plants represent early infections and are a total loss. However, only a part of one field was noted to have been disked up and replanted. At the last observation approximately 10% of these replants were infected with spotted wilt.

Other outbreaks of spotted wilt were seen near Livermore in Alameda County, in Santa Clara County, and in Napa County. In Livermore district severe infection was found in only one locality. In one large field approximately 30 to 40% of the plants were infected. These apparently represented both early and late infections. Other fields in the Livermore district showed very little spotted wilt. The outbreak in the eastern part

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[1] Figures taken from "Crop Notes", Calif. Dept. of Agric. July 20, 1944.

of Santa Clara County, east of San Jose, has resulted in infections ranging from 10 to 75% in several fields. In one locality south of Napa (Napa County), 6 fields were observed in which 30 to 50% of the plants were infected. Plants secured from San Leandro (located in the spotted wilt area of Alameda County) showed only slightly more early infection than did neighboring fields in which home-grown plants were used. Plants secured from Yolo County and set in the same field with home-grown plants showed late infections. As a rule only light infections of spotted wilt occur in both the Livermore and Napa districts. The source of infective thrips in some of these areas is not understood, but a high population of thrips apparently exists this season.

Light infections (varying from a trace to a small percentage) of spotted wilt were found in all other districts included in this survey. The lightest infections were found in the Sacramento and San Joaquin Valleys. Many of these areas apparently represent cases where the infective thrips had been blown in from considerable distances.

Curly Top (Virus). Curly top is causing only light losses this year, although it was present in all districts surveyed. The heaviest infections encountered were in the San Joaquin Valley. In Kern County the fields of early tomatoes (surveyed May 31) showed infections varying from 5 to 25%. On the same date 5 to 10% infection was seen in the staked tomatoes at Madera (Madera County). Likewise, most plots of staked tomatoes near Merced (Merced County) and some fields near Tracy (San Joaquin County) showed from 5 to 10% infection on June 27 and 28. The most severe infection seen was in a small plot of staked tomatoes near Merced, where nearly 50% of the plants had curly top. Infection as high as 10% was seen in individual fields in Alameda and Santa Clara Counties. Only occasional curly top plants were found in Yolo, Sacramento, Solano, Napa, and Contra Costa Counties.

Tomato Mosaic (Virus). Mosaic infection varied from a trace to nearly 100% in the fields surveyed. On the whole it is causing more damage than usual. Improper handling of the plants and the high aphid population this season have probably been contributing factors to the heavy infections seen. Considerable variation in symptoms was noted and it was apparent that a number of strains was present. The expression of the mosaic symptoms has apparently been intensified by the cool weather during the early part of the season. The effect of mosaic in setting back the plant and in causing a lighter set of fruit will no doubt cause a somewhat lighter yield.

Shoestring (Cucumber Mosaic Virus). A few mild cases of shoestring were found. No severe symptoms were seen.

Bacterial Canker (Corynebacterium michiganense). Bacterial canker is more common and widespread than usual. Much of this is attributed to the increased demand for plants from any source to take care of the increased acreage this year. Some can be traced directly to the replants in the field. In many cases the plants used in one field were obtained from more than one source. As a result, canker often appeared in only one part of the field. The distribution of canker and the percentage of in-

fection in the fields observed are summarized as follows:

Alameda County: One 30-acre field near San Lorenzo, 30-40%; one field of 20 acres near Livermore, 5%.

Santa Clara County: One field of 40 acres near Gilroy, 10%.

San Benito County: One 5-acre field near San Juan, trace.

Monetrey County: One 30-acre field near Greenfield, 1%.

Santa Cruz County: One field near Watsonville, 12%.

San Joaquin County: Found in several scattered fields, percentage of infection variable, as high as 75% in small portions of some fields.

Yolo County: 50% of a 5-acre area in one large field; 30% of a 3-acre area in another field; light infections in several other fields.

Napa County: Light infections in 3 fields.

Merced County: One 4-acre plot of staked tomatoes, 20%.

Contra Costa County: Trace of infection in 2 fields in the Brentwood area.

On the whole, the loss this season due to bacterial canker will not be heavy. However, it is evident that the disease is more common this season and extreme care must be taken in choosing seed this year. This is particularly true since the increased demand for seed may cause many growers to save their own seed.

Fusarium Wilt (Fusarium oxysporum f. lycopersici). Fusarium wilt is becoming an increasingly difficult problem in the Woodland district of Yolo County and threatens to tie up much of the best tomato growing land in the district. Even though the total loss in the district is not heavy, most growers are careful not to use land known to contain Fusarium. In the present survey in Yolo County (July 25 and August 3) Fusarium wilt was causing severe losses in portions of 2 fields. In these areas more than 50% of the plants were showing symptoms of varying degrees of severity. No doubt the symptoms will become apparent in many more plants before the end of the season. Several other fields in the district showed traces of Fusarium wilt, usually represented by scattered infected plants.

Fusarium wilt was also causing heavy losses in some fields of staked tomatoes in the Merced district. (July 21 and 22). Severe infections were seen in 4 fields, with scattered infected plants in a few other fields.

In one plot of 2 acres approximately 75% of the plants showed advanced symptoms, with many of them already dead. In another field of 25 acres infection averaged approximately 50% in an area covering half the field. In 2 other fields (of about 20 acres each) infection varied from 10 to 30% in different parts of the fields. At the time of this survey many of the plants were showing only the early symptoms of the disease and the losses will probably be much heavier before the end of the season.

A light infection of Fusarium wilt was found in one field in the Brentwood area in Contra Costa County.

Verticillium Wilt (Verticillium albo-atrum). Verticillium wilt is known to occur in most of the tomato-growing areas of the State. However, the extent of the damage due to Verticillium is not clear. In the present survey the early symptoms of the disease were seen in some fields. The symptoms will probably become more apparent later in the season. Verticillium was isolated from diseased tomato plants from Napa County and from the Pleasanton area in Alameda County. In the latter area one grower stated that it caused considerable reduction in yield each year.

Root Knot (Heterodera marioni). During the present survey, loss due to the root knot nematode was observed in only one field. This was in the Brentwood area. In an area of approximately 1/2 acre most of the plants were either killed or severely stunted. Smaller areas in the same field were also found to be infested with nematodes.

Dodder (Cuscuta sp.). Numerous tomato plants parasitized by dodder were found in one field near Brentwood in Contra Costa County. These plants were severely stunted and were mostly completely covered with the dodder. None of these host plants had set any fruit.

Blossom End Rot (Non parasitic). This trouble was frequently encountered in nearly all districts, but in no field was it at all common.

Silver Mites. Infestations of silver mites were found in the following areas: Kern County (May 31), Sacramento County and the Clarksburg district of Yolo County (August 3), and Napa County (August 4). These particular fields showed no signs of having been dusted with sulfur. Most growers were of the opinion that the silver mite was appearing earlier this season than usual.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

POTATO LATE BLIGHT SURVEY IN WELD COUNTY, COLORADO

E. W. Bodine

A survey of potato cull piles and commercial fields in Weld County was made in company with Dr. W. A. Kreutzer, Plant Pathologist, Colorado Experiment Station; Mr. W. J. Henderson, Extension Plant Pathologist, Colorado Extension Service; Mr. L. V. Toyne, County Extension Agent, Weld County; Mr. W. C. Edmundson, Horticulturist and Dr. Lawrence A. Schaal, Associate

Plant Pathologist of the Greeley Potato Station, U. S. Department of Agriculture on August 7, 1944.

Near Lucerne, in one large dumping area, 6 separate cull piles were found showing plants infected with Phytophthora infestans. In the Windsor district a large cull pile with infected plants was observed on the wet banks of a large irrigation canal, 50 feet from a commercial field. In all of these piles, both sweet clover and sunflower provided ample shade and protection, bringing about favorable conditions for infection. In one such cull pile, 300 plants selected at random were examined by the writer and Dr. W. A. Kreutzer. Of this number 263 showed blight lesions. No blight lesions were found extending upward from the seed tuber. The majority of lesions extended from the middle to upper portions of the infected plants. Because of the abundance of flies and other insects present it is suspected that sporangia may have been carried by these insects from the tubers to the upper portions of the infected vines. Microscopic examination revealed abundant dessicated sporangia on both stem and leaf lesions. Examination of tubers in all cull piles were made. Although characteristic symptoms were present no sporangia were found. However, infected stems and tubers held in moist chambers at 20°C. overnight showed profuse sporulation the following day.

In areas near Eaton, Ault, Kersey, and Greeley, over a dozen cull piles were examined. The majority of these piles were dumped outside storage cellars and showed a high percentage of tuber decomposition with no vines. However, in some piles examined, unrotted tubers infected with Phytophthora infestans were found to be in the early stages of sprouting. With continued growth and favorable conditions for infection, these cull piles may constitute a more dangerous source of inoculum than those already found infected. This is because weather conditions and vine growth at present do not favor infection in commercial fields.

Interest in cull piles as a possible source of inoculum is due to the fact that field studies in 1943 conducted by Dr. W. A. Kreutzer, Plant Pathologist and Dr. John G. McLean, Horticulturist, Colorado Experiment Station in both the Greeley and Fort Collins areas showed that tubers artificially inoculated with Phytophthora infestans failed to produce plants in the majority of instances. In cases where plants were produced, no late blight lesions were found. The majority of seed pieces planted were slightly infected, with one or more eyes showing no infection. The indications from these 1943 trials are that conditions favored rapid rotting of infected seed pieces.

A county campaign under the supervision of Mr. L. V. Toyne, Weld County Agent, for the destruction of these cull piles is now in progress. It has been recommended by Station and Extension workers that copper sprays or dusts be applied to fields now as a protective measure.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

FURTHER REPORTS ON POTATO LATE BLIGHT

Except as indicated, reports are by Emergency Plant Disease Prevention Project personnel.

NEW ENGLAND: In southern Maine, 6 potato fields were examined August 11 in York and Cumberland Counties in Lebanon, South Lebanon, Days Mills,

Higgins Beach, and Cape Elizabeth. Blight was found in 2 fields in Cape Elizabeth. A light scattered infection was present in a 2-acre field and heavy scattered infection was present in the other field of 20 acres. Both fields were Green Mountain. If present weather conditions continue Blight will be of minor consequence in these fields as the plants were starting to succumb to drought. Weather conditions in the area at present are not favorable for the spread of Blight. Cobblers have matured prematurely and a light crop is now being dug.

In New Hampshire, 13 fields were examined August 9-10 in Walpole, Hudson, Litchfield, Epping, Lee, Durham, Pittsfield and Loudon for Late Blight. It was found in only 1 field in Walpole on August 9. The field was planted in Green Mountains and located in the Connecticut River Valley. Blight was very lightly scattered throughout the 43-acre field. Adjoining fields of Cobblers and Katahdins seemed to be dying prematurely by drought and no evidence could be found that Blight was present in these fields. In other potato areas of Southern New Hampshire potatoes are also suffering from lack of sufficient rainfall.

In Windham County, Vermont, Late Blight was found in 6 out of 12 potato fields examined August 8 in Guilford, Westminster, Windham and Brattleboro. Only a trace was found in 2 fields. Infection was light to moderate in 3 other fields. In the 6th field however, an extremely heavy infection existed. This latter field in Windham was one of 11 acres, the lower half of which was rapidly being killed by Blight in spite of sprays of 3 or 4 day intervals for the last 2 weeks. The blight was discovered by the grower on July 25 and it apparently had gained considerable headway by that time. In the case of 2 widely separated rows blight had apparently been spread at the time of the last cultivation from the focal points of infection for a distance of 500 ft. up the rows. Plants and parts of plants in these 2 rows had been dead with blight for some time. The seed used in this field was certified Green Mountain from a car received at Bellows Falls of which about one-half was discarded upon arrival because of rots unidentified by the dealer. -- R. C. Cassell

NEW YORK: Though insect damage (leaf-hopper, aphis, and tarnished plant bug) is more extensive, Late Blight was found in 5 of 6 fields surveyed in the Elba muck area. The Late Blight was serious only in small areas within each field, and apparently had been held in check pretty well since the first of July. -- John Niederhauser, Aug. 7-12.

NORTH DAKOTA: We have one case of Late Blight discovered near Grafton in the northern part of the Red River Valley by inspectors of the State Seed Department. Specimens are not available but sporulation was reported. There were only a few infected plants found and they occurred in one field only. -- W. E. Brentzel, North Dakota Agricultural Experiment Station, quoted by I. E. Melhus.

On August 11, W. E. Brentzel of the North Dakota Agricultural Experiment Station and the writer inspected potatoes in Traill and Grand Forks Counties in the Red River Valley. Late Blight was found in 3 fields near Hillsboro, Traill County, fresh lesions with abundant sporulation occurring on all plants. It was somewhat surprising to see so much Late Blight after several days of very high temperature (90° F and upwards), especially since night temperatures were also higher than the optimum for late blight develop-

ment. Apart from these 3 fields, no infection by Late Blight was seen.--Ian W. Tervet.

NEBRASKA: Temperature in Nebraska was higher than normal with the humidity low, nevertheless we have a report from Dr. J. H. Jensen, dated August 5, as follows:

"During the past 2 weeks all areas producing early potatoes were visited and a large number of individual fields were inspected. Late Blight was found present in only one field. This is a field of Irish Cobblers planted with home-grown seed where every plant in the field was infected. It is difficult to explain why more Late Blight did not occur in Nebraska this year, especially in view of the fact that seed known to be infected was planted in a number of instances and that generally favorable conditions for the disease seemed to prevail during June and July. No Late Blight occurred in the plot at Lincoln where late-blight seed was planted."--Quoted by I. E. Melhus in letter to members of Late Blight Committee of Upper Mississippi Valley Plant Pathologists.

PURPLE-TOP WILT OF POTATO AND THE ASTER-YELLOWS VIRUS IN THE DAKOTAS

Ian W. Tervet

During the past few weeks, observations on the distribution of the Aster-Yellows Virus have been made in regard to

(1) evidence of infection on crop plants and common weeds, and
(2) the geographical distribution of the virus.

While positive identification of the virus has not been made by controlled inoculations into tester plants, there seems to be little doubt that the Aster Yellows was responsible for much of the yellowing and abnormal growth of carrots and certain weed plants.

In the Black Hills region of South Dakota, all plantings of carrots in gardens and truck farms were found to be infected. In about half of the plants evidence of infection, based on the purple coloration of older leaves and the tendency for excessive development of new leaves that were chlorotic, was readily seen. Carrots in farm gardens in southwestern North Dakota were similarly infected.

At Mandan, North Dakota, Roderick Sprague, of the Bureau of Plant Industry, accompanied the writer in examination of gardens for plants infected with Aster Yellows. Carrots were heavily infected, not less than 50% of the plants having characteristic symptoms. On lettuce, some flowering shoots were distorted and chlorotic and were assumed to be infected with the virus. Salsify was attacked, one planting having all plants infected.

Weeds attacked included Erigeron canadense, Lactuca scariola, and species of ragweed.

Potatoes in the Black Hills region and at Mandan, growing near infected weed plants or infected carrots, etc., were in all cases free from symptoms of the Purple-Top Wilt that occurs in the Red River Valley and other potato-growing areas of Minnesota and the Dakotas.

In the Black Hills, the heavy infestation of Potato Psyllids had produced a purpling of the vines, but this discoloration was associated with Psyllid Yellows and was distinct from the coloration associated with Purple-Top Wilt.

There does not appear to be good evidence associating Aster Yellows and Purple-Top Wilt in potatoes, at least in the Dakotas, for in regions where Aster Yellows is common in carrots and some other plants, oftentimes it is hard to find Purple-Top Wilt on potatoes. One potato variety, commonly grown in the Black Hills and at Mandan, is the Bliss Triumph, which is quite susceptible to Purple-Top Wilt in the Red River Valley.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

OTHER REPORTS ON POTATO DISEASES

Reports are of Emergency Plant Disease Prevention Project surveys.

SOUTHERN MAINE: Less than 1% of Purple-Top (Aster-Yellows Virus) was found in one field in Higgins Beach. -- Robert C. Cassell, August 11.

SOUTHERN NEW HAMPSHIRE: In most fields examined Early Blight (Alternaria solani) is prevalent to the extent of 100% infection, and severity is often heavy. Blackleg (Erwinia phytophthora) was found in 2 fields in Litchfield and 1 field in Pittsfield. Less than 1% infection was present in all cases. Potatoes are suffering from lack of sufficient rainfall. Aphids are the prevailing problem but flea beetles and leaf hoppers are also numerous. -- Robert C. Cassell, August 9 - 10.

SOUTHERN VERMONT: Early Blight was present in all of the 12 fields examined in Windham County, August 8. Prevalence ranged from 50 to 100% and severity from moderate to heavy. Less than 1% infection by Blackleg was found in 2 fields in Windham. -- Robert C. Cassell.

NEW YORK: Early Blight was present in each field examined in the Elba muck area, but only as occasional lesions on the lower leaves. The Virus diseases (Leaf Roll, Mosaic, Spindle Tuber, etc.) were well-masked by the large growth attained by the vines and the extensive insect damage from leaf-hoppers, aphis, and tarnished plant bugs. -- John Niederhauser, August 7-12.

INDIANA: The writer accompanied Dr. C. T. Gregory, extension plant pathologist of the Purdue Agricultural Experiment Station, on a survey of crops growing on muck soils of north-central and northeastern Indiana. Traces of Early Blight were observed in DeKalb and Steuben Counties, as well as a few plants with Spindle Tuber (Virus) in one field in DeKalb County. This latter field had been planted from local-grown non-certified seed potatoes. A slight amount of Scab (Actinomyces scabies) was present on Cobblers being harvested in Cass County.

In spite of the long-continued hot, dry weather some growers were continuing to spray faithfully, while others were omitting spraying. -- J.S. Tidd, week ending August 12.

RED RIVER VALLEY OF NORTH DAKOTA: On August 11, W. E. Brentzel of the North Dakota Agricultural Experiment Station and the writer inspected potatoes in Traill and Grand Forks Counties. Early Blight occurred in all fields, but infection was light. Purple-Top Wilt was found in about half of the fields examined, a maximum of about 10% infected plants occurring in Triumphs, while in Cobblers, the maximum infection was 5%. Most fields had less than 1% infected plants. Bacterial Ringrot, Corynebacterium sepedonicum, was commonly found in fields of table stock; the average infection figure of less than 1% wilted plants unquestionably will increase before harvest.

Heaviest loss to potatoes in Grand Forks and Traill Counties is resulting from hopperburn and flea beetle injury. More than half of the fields examined were severely injured by hopperburn and in some of the fields little foliage remained. -- Ian W. Tervet.

SOUTH DAKOTA: Hopperburn has been the cause of premature death of many of the potatoes in the Brookings area of South Dakota, but northwards towards Watertown, very much less Hopperburn was observed. In Codington and Clark Counties, there was no general infestation of leaf hoppers, although in a few fields Hopperburn was prominent.

In the Black Hills region, especially in and near Rapid City, a very destructive outbreak of Psyllid Yellows [illegible] due to Psyllid injury has occurred. Early plantings of potatoes already had the vines killed. Late plantings, made toward the end of June, have escaped much of the injury. There is little commercial potato production in the Black Hills region, home gardens and small truck farms being the main sources of the crop. Outbreaks of Psyllid Yellows have occurred in other years, but the loss this year is much heavier than in earlier years. -- Ian W. Tervet, August 7-11.

MONTANA: During the period July 24 to 29 a survey of the Bitter Root and Flathead Valleys in western Montana was made with Dr. M. M. Afanasiev of the Montana Agricultural Experiment Station. In the Orchard Homes area near Missoula, Fusarium wilt (F. solani [f. eumartii]) and the Virus diseases Mosaic, Leaf Roll, and Spindle Tuber were found causing minor damage to potatoes. In the Kalispell area a number of fields examined showed rather high mortality of plants due to a soil disease diagnosed as Fusarium blight (F. solani [f. eumartii]). -- C. M. Slagg.

COLORADO: A trace of each of the following diseases was observed in many potato fields inspected in Weld County in northern Colorado August 4: Fusarium wilts due to F. oxysporum and F. solani f. eumartii, Early Blight, Mosaic, and Leaf Roll.

From August 8 to 12, inclusive, a survey was made in southern Colorado in the counties of Otero, Pueblo, Rio Grande, and Saguache, in company with Dr. W. A. Kreutzer, Plant Pathologist of the Colorado Experiment Station.

The most serious disease encountered in Otero County (early potato area) was Bacterial Ringrot. Representative fields from certified and war-approved seed from 2 out-of-State sources and of Colorado-certified Cobbler seed showed varying amounts of the disease. High percentages of infection, ranging from 20 to 50%, were found in fields planted with certified and war-approved seed from the 2 other States. From a trace to almost

5% was present in fields planted to the Colorado certified seed.

As previously reported, excessive amounts of Bacterial Ringrot were observed to be present in the out-of-State seed at the time of cutting. It is also known that not all of the cutting operations were conducted in the manner recommended for the prevention of transmission of Corynebacterium sepedonicum. It is felt, therefore, that the greater amount of infection seen in the field was due to transmission by the cutting knife.

Harvested tubers from Ringrot diseased plants, although infected, were not showing complete breakdown either in the field or in the sheds. It is feared that this breakdown may occur in transit or in the markets. It was recommended that where this situation occurred harvest should be delayed to allow breakdown to take place in the fields rather than in transit.

A considerable reduction in yield due to Psyllids (Paratrioza cockerelli) was also observed in Otero County, in many fields where dusting was not conducted soon enough or in the proper fashion. A shortage of power dusters in this newest Colorado potato area and inexperience in dusting operations are believed to be responsible for this excessive psyllid damage.

Other diseases encountered in varying amounts in Otero County were: Blackleg, trace to 2%; Fusarium Wilts, a trace; Scab, a trace; Early Blight, a trace, with no damage; Rhizoctonia solani, a trace. Virus diseases observed were Leaf Roll, 1 to 2%; Mosaics of all types, trace to 5%; Giant Hill, a trace; Spindle Tuber, 1 to 3%; and Haywire, a trace.

Noticeable amounts of tubers being harvested in some fields were misshapen and small. This was believed to be due to shallow planting, improper irrigation, virus diseases, and psyllid infestations.

In Rio Grande and Saguache Counties (late potato district) only the diseases that manifest themselves early in the growing season were apparent. Blackleg was prevalent in the area, ranging in some fields from a trace to 1%. Rhizoctonia was present in trace amounts. Other diseases observed were Fusarium Wilts, a trace; Early Blight, a trace; Mosaics (Rugose and Crinkle), a trace in most fields, with infection especially high in fields planted with war-approved seed; Leaf Roll, a trace, and Spindle Tuber, a trace. Little or no Psyllid damage was observed. Growers in this area use power sprayers and apply lime sulfur spray at recommended intervals.

An accurate determination of the amount of Bacterial Ringrot in this district could not be made at this time. Only the earliest manifestations of the disease were evident in trace amounts. Most of the seed planted in this area was Colorado certified seed. The potato stands in the majority of the fields are excellent. -- E. W. Bodine.

ONION DISEASES IN NEW YORK

John Niederhauser

During the week of August 7-12, a study was made with Dr. A. G. Newhall, of the Department of Plant Pathology, New York State College of Agriculture of the diseases of vegetable crops in the muck areas of western and central New York. Inasmuch as the onion is the most important muck crop in these regions, particular emphasis was given to the diseases and troubles in

onion fields.

The most important factors affecting the yield and quality of vegetable crops have been the lack of rain since the early part of the season and the very high temperatures of the last few weeks. With the exception of a few isolated and very local areas, no effective rain has fallen since June 22. These unfavorable conditions for good plant growth have also aided in the building up of large insect populations.

Elba. In the Elba muck area there are about 3,500 acres of onions. Practically all of this acreage is planted with seed, treated with formaldehyde for smut control. No field was seen that was not so planted. The Early Yellow Globe and the Late Yellow Globe are the 2 onion varieties grown. Yields this year will mostly lie between 600 and 800 bushel-crates per acre. This is significantly below the 1000-1200 bushel-crates per acre that are harvested in a good year. In addition to the hot, dry weather, the onion thrips has been a major factor in killing the onions early and thus reducing the yields and the size of the onions. During the time that the writer was at Elba, veritable clouds of the thrips filled the air near the onion fields. In about one-third of the fields the onions were being topped or had already been stacked up in crates in the field.

The onion Bulb Nematode (Ditylenchus dipsaci) was found in a small part of one field. The infested portion was about 75 feet long and 40 feet wide, being elliptical in shape with the longer axis parallel with the rows. As far as is known, this is the first occurrence of the Bulb Nematode in the Elba muck area. A careful search in 22 other fields and a more superficial survey over approximately 2000 acres of onions failed to uncover any other evidence of the presence of the nematode. Attempts to discover the way the organism was introduced into this area were not successful. The New York State Department of Agriculture and Markets has been advised of the discovery. Eradicatory measures will be taken as soon as possible.

Dr. A. G. Newhall reports that Smut (Urocystis cepulae) was quite prevalent in this area early in the season, and caused a 5 to 10% reduction in the stand. Maggot injury had apparently accounted for additional 20% reduction. There was somewhat more late (May and June) Smut infection than in previous years, and in most of the 23 fields surveyed a trace of Smut could be found in the mature onions. In one field 4% of the mature onions were smutted, and in 5 fields 0.5 to 1% smut could be found. The beneficial results of formaldehyde treatment of the seed at the time of planting was strikingly demonstrated in one field where the water line of the planter had plugged shut for one row. In this row the stand had been reduced to 60% of that in the other rows, and nearly 10% of the mature onions in this row showed Smut lesions.

Macrosporium [Alternaria] porri and Pleospora herbarum were comparatively very slight this year and were even absent in many of the fields.

Pink Root (caused by Phoma terrestris, and followed by Fusarium malli) was present in all fields on from 10 to 80% of the onions examined. The writer knows of no experimental evidence to show how much damage this disease might cause.

Downy Mildew (Peronospora destructor) is not a factor in yield reductions this year, but traces of the disease appeared in small areas in 3 fields. This year the pathogen appeared a month later than usual, and its spread

was promptly halted by the dry, hot weather. Some believe that part of the credit for the lack of Downy Mildew is due to the eradication of Egyptian top-set onions, which serve as the source of inoculum in the spring.

Savannah. In the Savannah area there are about 1000 acres of onions. As at Elba, the Early and Late Yellow Globe varieties are grown, and the fields are planted with seed treated with formaldehyde at planting time. Nine fields were surveyed. Yields were generally between 450 and 500 bushel-crates per acres, 200-250 bushel-crates below what are considered "good" yields for this area. This reduction is primarily due to high temperatures, drought and thrips.

In each field traces of Smut were found on the mature onions. Pink Root (Phoma terrestris) was omnipresent, and was found on all the plants examined. On the average 80% of the roots were affected.

Canastota (Observations of Dr. A. G. Newhall). In this muck area there are about 2400 acres of onions grown. The fields are planted with onion sets, a practice which has been adopted in order to get the onions off a little earlier. This use of sets has also enabled the growers to escape Smut. This year between 100-200 acres of onions were planted with seed because of the acute shortage of sets. But very little Smut developed in these fields, probably because the inoculum had largely disappeared during the years that sets had been used.

The onion Bulb Nematode is present on a few farms, and in one case had caused a 50% loss in the field.

Downy Mildew was present early, but is of no consequence now.

Dry weather and thrips have matured the onions early and reduced the yields.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

JULY WEATHER

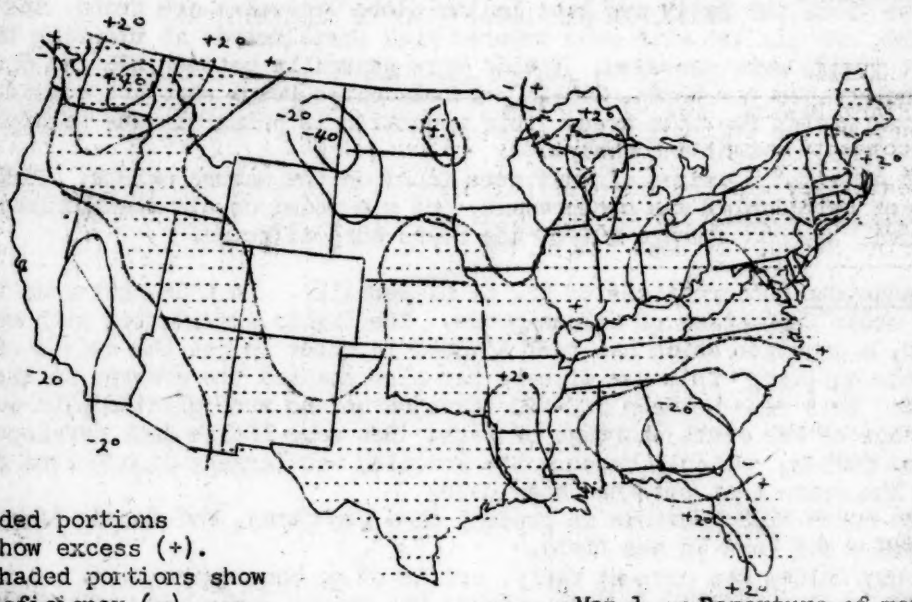
(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for Week Ending August 8, 1944).

Map I shows that the average temperature for July was near normal in most sections of the country. From the Ohio Valley and Lake region eastward the monthly means were moderately above normal and also from the lower Missouri Valley southward, and more locally in the far Northwest. Elsewhere the temperature averaged approximately normal or slightly lower.

Map II shows the July percentage of normal precipitation by States. The outstandingly dry areas include those from the Ohio Valley eastward and southward; also the Southwest, far West, and Northwest. The largest plus anomalies appear in the Great Plains from Oklahoma to South Dakota and in Minnesota.

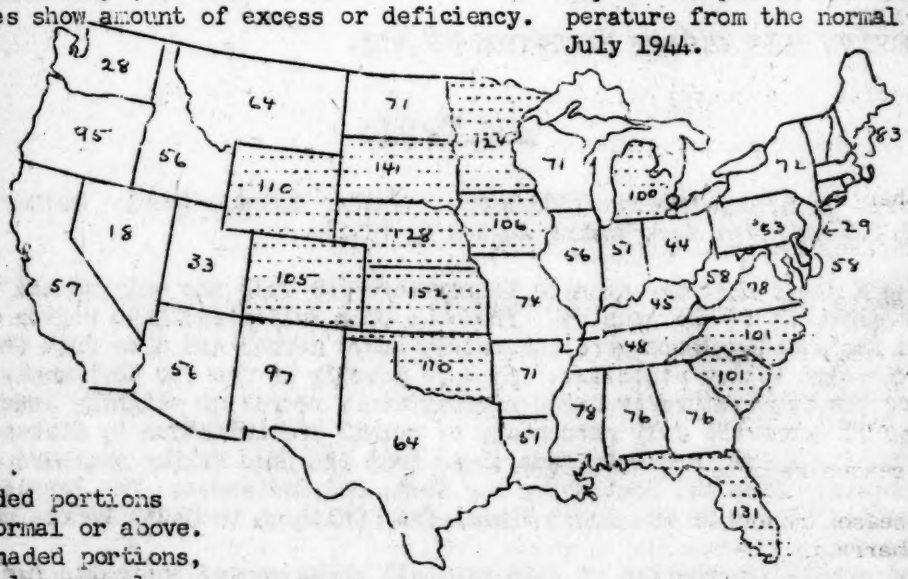
The areal distribution of July rainfall shows marked contrasts for different sections of the country. Tennessee had the driest July of record; New Jersey the driest since 1910; Louisiana since 1924; Kentucky, Ohio, and Texas since 1930, and Virginia the driest since 1932. Indiana and Illinois had the least July amount in 4 years. However, Maryland and Delaware had less rain in July last year than in this.

On the other hand, Nebraska had both the wettest July and wettest June and July combined since 1928, while both Kansas and South Dakota had the wettest since 1922. The latter State had more rain during the 2-month period, June-July, than had occurred in any year since the memorable wet one of 1915, while this 2-month period in Nebraska was the wettest since 1914.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Map 1. - Departure of mean temperature from the normal for July 1944.



Shaded portions normal or above.
Unshaded portions, below normal.

Map II - Percentage of normal precipitation by States for July 1944